

AMENDMENTS TO THE SPECIFICATION

Please amend the specification, as follows:

Please replace the paragraph appearing at page 9, lines 20-24, with the following amended paragraph:

In the following partial structure of PPE (I), it is preferable that Z is a phenylene group and n is 1 (i.e., benzyl derivative), or that Z is an oxygen atom and n is 2, more preferably a ~~p-ethenylbenzyl~~, ~~m-ethenylbenzyl~~ p-ethenylbenzyl, m-ethenylbenzyl, or ethenyloxyethyl group.

Please replace the paragraph appearing at page 10, lines 1-13, with the following amended paragraph:

PPEs (I) having these group(s) at the terminal(s) thereof have a particularly favorable interaction with a crosslinking curing agent, and allow production of low-dielectric constant products even without the need for adding a great amount of the crosslinking curing agent. In particular, PPEs having both ~~p-ethenylbenzyl~~ and ~~m-ethenylbenzyl~~ p-ethenylbenzyl and m-ethenylbenzyl groups at their terminals have low melting and softening points, while those having only ~~p-ethenylbenzyl~~ p-ethenylbenzyl groups at their terminals have high melting and softening points. Accordingly, it become possible to control the melting and softening points of PPEs arbitrarily by adjusting the ratio of the ~~p-ethenylbenzyl~~ and ~~m-ethenylbenzyl~~ p-ethenylbenzyl and m-ethenylbenzyl groups.

Please replace the paragraph appearing at page 12, line 3 to page 13, line 3, with the following amended paragraph:

According to Japanese Unexamined Patent Publication No. 2002-536476 (the contents of which are hereby incorporated by reference), low molecular weight PPEs may be isolated and obtained by a variety of methods but are usually isolated and obtained by precipitation with a suitable reactive agent. As the method for reducing molecular weight of PPEs, may be used the method described in The Journal of Organic Chemistry, 34, 297-303 (1969) (the contents of which are hereby incorporated by reference). This method uses a reaction of a phenol species with PPEs for reduction in molecular weight of the PPEs. The phenol species to be used in this reaction includes phenol, cresol, xlenol, hydroquinone, bisphenol A, 2,6-dimethylphenol, 4,4'-dihydroxydiphenyl ether or the like, but the use of a phenol species having 2 or more functionalities is preferred for improvement in heat resistance of the products after curing. Additionally, as the initiator of the reaction, the use of an oxidizer such as benzoylperoxide, 3,3',5,5'-tetramethyl-1,4-diphenoxyquinone, chloranil, 2,4,6-tri-*t*-butylphenoxy, *t*-butylperoxyisopropyl monocarbonate and ~~azobisisobutyronitrile~~ azobisisobutyronitrile is preferable, and a metal carboxylate salt may also be added to promote the reaction if desired. In addition, compounds that generate volatile components such as low molecular weight alcohols after the reaction are more preferably used as the initiator for the purpose of suppressing increase in dielectric constant.

Please replace the paragraph appearing at page 23, line 16 to page 24, line 19, with the following amended paragraph:

In addition, the PPE resin composition according to the present invention may further comprise a reaction initiator for the purpose of enhancing the advantageous effect of the crosslinking curing agent. Although the presence of PPE (I) and a crosslinking curing agent alone can advance curing at high temperature, it is desirable to add the reaction initiator as it is sometimes difficult to keep high temperature until the curing is completed depending on the process conditions. The "reaction initiator" is not particularly limited if it can accelerate curing of the PPE resin compositions at a suitable temperature and within a suitable period, and increase the characteristics such as heat resistance or the like of the PPE resin; and examples thereof are oxidizers such as α , α' -bis(*t*-butylperoxy-*m*-isopropyl)benzene, 2,5-dimethyl-2,5-di(*t*-butyl peroxy)-3-hexyne, benzoylperoxide, 3,3',5,5'-tetramethyl-1,4-diphenoxyquinone, chloranil, 2,4,6-tri-*t*-butylphenoxyl, *t*-butylperoxyisopropyl monocarbonate, ~~azobisisobutyronitrile~~ azobisisobutyronitrile. And if desired, the curing reaction may further accelerated by further adding a metal carboxylate salt. Among them, α , α' -bis(*t*-butylperoxy-*m*-isopropyl)benzene is ~~particularly~~ particularly preferable as the reaction initiator. It is because the compound has a relatively high reaction initiation temperature, thus not initiating curing when the curing is not required, for example, during prepreg drying, and not impairing the storage stability of the PPE resin compositions; a low volatility, preventing vaporization during prepreg drying and storage; and thus an excellent stability.

Please replace the paragraph appearing at page 30, line 17 to page 31, line 17 with the following amended paragraph:

Subsequently, the terminal hydroxyl group of the low molecular weight PPE (number averaged molecular weight: about 2,400) was capped with an ethenylbenzyl group. Into a 1-liter three-necked flask equipped with a temperature controller, stirring equipment, cooling equipment, and a dropping funnel, were added 200 g of the low molecular weight PPE (number averaged molecular weight: about 2,400), 14.51 g of chloromethylstyrene (50/50 mixture of *p*-chloromethylstyrene and *m*-chloromethylstyrene; Tokyo Kasei Kogyo Co., Ltd.), 0.818 g of tetra-*n*-butylammonium bromide, and 400 g of toluene. And the mixture was stirred until complete dissolution and heated to 75°C. The mixed solution was added dropwise with an aqueous sodium hydroxide solution (11 g of sodium hydroxide/11 g of water) over the period of 20 minutes and stirred at 75°C for additional 4 hours. Then, the solution in the flask was neutralized with a 10% aqueous hydrochloric acid solution, and added with a large amount of methanol to reprecipitate the ~~ethenylbenzylated~~ ethenylbenzylated modified PPE, and the PPE was collected by filtration. The collected PPE was washed three times with a mixed solution of methanol and water at the ratio of 80 to 20, and dried under reduced pressure at 80°C for 3 hours to give an ethenylbenzylated modified PPE containing no solvent or water. The modified PPE had a number averaged molecular weight of about 2,700 as determined by gel permeation chromatography. Hereinafter, the PPE thus obtained will be referred to as "PPE-1".

Please replace the paragraph appearing at page 39, lines 6-17, with the following amended paragraph:

The resin content and resin fluidity of prepregs were measured using samples (i) prepared in EXAMPLEs 1 to [[4]] 9 and COMPARATIVE EXAMPLEs 1 and 2; the glass transition point (T_g), dielectric constant, dielectric dissipation factor, thermal expansion coefficient, flame resistance, copper foil adhesion strength, and hygroscopicity, samples (iii) above; the secondary processability, solder heat resistance after moisture absorption, and internal layer copper foil adhesion strength, samples (ii) above; the resin hole-filling property into IVH, samples (iv) above; and the transmission loss, samples (v) above.

Page 41, please replace Table 1 with the following amended Table 1:

Page 42, please replace Table 2 with the following amended Table 2:

Table 1

| | | | EXAMPLE | | | | |
|--|---|-----------------------------------|---------|--------|--------|--------|--------|
| | | | 1 | 2 | 3 | 4 | 5 |
| PPE Resin Wannish Varnish | PPE-1 | Mass Part | 70 | 0 | 70 | 0 | 0 |
| | | Mn | 2700 | - | 2500 | - | - |
| | PPE-2 | Mass Part | 0 | 70 | 0 | 0 | 0 |
| | | Mn | - | 2800 | - | - | - |
| | PPE-3 | Mass Part | 0 | 0 | 0 | 70 | 0 |
| | | Mn | - | - | - | 2500 | - |
| | PPE-4 | Mass Part | 0 | 0 | 0 | 0 | 70 |
| | | Mn | - | - | - | - | 2500 |
| | Crosslinking Curing Agent 1 | kind | TAIC | TAIC | TAIC | TAIC | TAIC |
| | | Mass Part | 30 | 30 | 20 | 30 | 30 |
| | Crosslinking Curing Agent 2 | kind | - | - | TMPT | - | - |
| | | Mass Part | - | - | 10 | - | - |
| Prepreg | Reaction Initiator | Mass Part | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| | Flame Retardant | Mass Part | 20 | 20 | 20 | 20 | 20 |
| Laminated Sheet | Inorganic Filler | Mass Part | 14 | 14 | 14 | 14 | 14 |
| | | av. Diameter (μm) | 3 | 3 | 3 | 3 | 3 |
| Cu Foil | Surface Roughness | μm | 6 | 6 | 6 | 6 | 6 |
| Prepreg | Resin Content | % | 55 | 55 | 55 | 55 | 55 |
| | Resin Fluidity | % | 15 | 15 | 13 | 15 | 15 |
| Laminated Sheet | Tg | $^{\circ}\text{C}$ | 218 | 222 | 236 | 230 | 225 |
| | Dielectric Constant | | 3.15 | 3.15 | 3.15 | 3.14 | 3.15 |
| | Dielectric Dissipation Factor | | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 |
| | Thermal Expansion Coeff. (Z-axis) | ppm/ $^{\circ}\text{C}$ | 59 | 59 | 59 | 59 | 61 |
| | Flame Resistance | UL Standard | V-0 | V-0 | V-0 | V-0 | V-0 |
| | Cu Foil Adhesion Strength | kN/m | 1.45 | 1.45 | 1.45 | 1.62 | 1.62 |
| | Sec. Processability | | OK | OK | OK | OK | OK |
| | Moisture Absorption | % | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| | Solder Heat Resistance after Moisture Absorption | | OK | OK | OK | OK | OK |
| | Inner Layer Cu Foil Adhesion Strength | kN/m | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| | IVH Filling Ability | | OK | OK | OK | OK | OK |
| | Transmission Loss | dB/m | -6.0 | -6.0 | -6.0 | -6.0 | -6.0 |

Table 2

| EXAMPLE | | | COMPARATIVE | | | | | |
|--|--|-----------------------------------|-------------------|---------|--------|--------|-----------------|-----------|
| | | | 6 | 7 | 8 | 9 | 1 | 2 |
| PPE Resin Warrich Varnish | PPE-1 | Mass Part | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mn | - | - | - | - | - | - |
| | PPE-2 | Mass Part | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mn | - | - | - | - | - | - |
| | PPE-3 | Mass Part | 0 | 0 | 70 | 60 | 70 | 70 |
| | | Mn | - | - | 2500 | 2500 | 14000 | 800 |
| | PPE-4 | Mass Part | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mn | - | - | - | - | - | - |
| | PPE-5 | Mass Part | 70 | 0 | 0 | 0 | 0 | 0 |
| | | Mn | 2500 | - | - | - | - | - |
| | PPE-6 | Mass Part | 0 | 4200]70 | 0 | 0 | 0 | 0 |
| | | Mn | - | [-14200 | - | - | - | - |
| | Unmodified PPE | Mass Part | 0 | 0 | 5 | 50 | | |
| | | Mn | - | - | 14000 | 9000 | | |
| | Crosslinking Curing Agent 1 | kind | TAIC | TAIC | TAIC | TAIC | TAIC | TAIC |
| Laminated Sheet | Crosslinking Curing Agent 2 | Mass Part | 30 | 30 | 30 | 40 | 30 | 30 |
| | | kind | - | - | - | - | - | - |
| | Reaction Initiator | Mass Part | - | - | - | - | - | - |
| | Flame Retardant | Mass Part | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| | | Mass Part | 20 | 20 | 20 | 20 | 20 | 20 |
| | Inorganic Filler | Mass Part | 14 | 14 | 14 | 14 | 20 | 20 |
| | | av. Diameter (μ m) | 3 | 3 | 3 | 3 | 3 | 3 |
| | Cu Foil | Surface Roughness | μ m | 6 | 6 | 6 | 6 | 6 |
| | Prepreg | Resin Content | % | 55 | 55 | 55 | 55 | 56 |
| | | Resin Fluidity | % | 15 | 11 | 13 | 8 | 25 |
| | | Tg | $^{\circ}$ C | 235 | 230 | 230 | 230 | 228 |
| | | Dielectric Constant | | 3.14 | 3.14 | 3.14 | 3.25 | 3.20 |
| | | Dielectric Dissipation Factor | | 0.0015 | 0.0014 | 0.0014 | 0.0017 | 0.0014 |
| | | Thermal Expansion Coeff. (Z-axis) | ppm/ $^{\circ}$ C | 59 | 59 | 59 | 59 | 52 |
| | Flame Resistance | UL Standard | V-0 | V-0 | V-0 | V-0 | V-0 | V-0 |
| | Cu Foil Adhesion Strength | kN/m | 1.37 | 1.62 | 1.62 | 1.47 | 0.96 | 0.64 |
| | Sec. Processability | | OK | OK | OK | OK | x scratch | x scratch |
| | Moisture Absorption | % | 0.33 | 0.33 | 0.33 | 0.37 | 0.33 | 0.34 |
| | Solder Heat Resistance after Moisture Absorption | | OK | OK | OK | OK | x blister | x blister |
| | Inner Layer Cu Foil Adhesion Strength | kN/m | 0.69 | 0.74 | 0.74 | 0.64 | 0.44 | 0.31 |
| | IVH Filling Ability | | OK | OK | OK | OK | x blister crack | OK |
| | Transmission Loss | dB/m | -6.0 | -6.0 | -6.0 | -6.3 | -6.1 | -6.1 |